

**RAW WATER IRRIGATION METERING
PROJECT**

**PROPOSITION 13
URBAN WATER CONSERVATION PROGRAM
GRANT PROPOSAL**

**BY
CONTRA COSTA WATER DISTRICT
1331 CONCORD AVENUE
P.O. BOX H2O
CONCORD, AG 94524**

FEBRUARY 28, 2002

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form**

1. Applying for (select one): ☒ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
☐ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Contra Costa Water District
3. Project Title: Raw Water Irrigation Metering Project
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|---|
| Name, title | <u>Walter J. Bishop, Gneral Mgr.</u> |
| Mailing address | <u>P.O. Box H2O</u> |
| Telephone | <u>Concord, CA 94524-2099</u>
<u>(925) 6880-8034</u> |
| Fax. | <u>(925) 688-8197</u> |
| E-mail | <u>wbishop@ccwater.com</u> |
5. Contact person (if different):
- | | |
|------------------|--|
| Name, title. | <u>Karen S. Ustin, Finance Dir.</u> |
| Mailing address. | <u>P.O. Box H2O</u> |
| Telephone | <u>Concord, CA 94524-2099</u>
<u>(925) 688-8042</u> |
| Fax. | <u>(925) 688-8347</u> |
| E-mail | <u>kustin@ccwater.com</u> |
6. Funds requested (dollar amount): \$372,000
7. Applicant funds pledged (dollar amount): \$0
8. Total project costs (dollar amount): \$372,000
9. Estimated total quantifiable project benefits (dollar amount): \$1,940,000
- Percentage of benefit to be accrued by applicant: 50%
- Percentage of benefit to be accrued by CALFED or others: 50%

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

10. Estimated annual amount of water to be saved (acre-feet): 440 AF
- Estimated total amount of water to be saved (acre-feet): 8,800 AF
- Over 20 years
- Estimated benefits to be realized in terms of water quality, instream flow, other: 8,800 AF
11. Duration of project (month/year to month/year): 10/02 to 7/05
12. State Assembly District where the project is to be conducted: Joseph Cancimilla - 7
Lynn Leach - 7
13. State Senate District where the project is to be conducted: Tom Torlakson - 7
George Miller - 7
14. Congressional district(s) where the project is to be conducted: Ellen Tauscher - 11
15. County where the project is to be conducted: Contra Costa
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: December 2000
17. Type of applicant (select one):
- Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
- ☐ (a) city
- ☐ (b) county
- ☐ (c) city and county
- ☐ (d) joint power authority
- ☒ (e) other political subdivision of the State, including public water district
- ☐ (f) incorporated mutual water company
- ☐ (g) investor-owned utility
- ☐ (h) non-profit organization
- ☐ (i) tribe
- ☐ (j) university
- ☐ (k) state agency
- ☐ (l) federal agency
- DWR WUE Projects: the above entities (a) through (f) or:
18. Project focus:
- ☐ (a) agricultural
- ☒ (b) urban

Consolidated Water Use Efficiency 2002 PSP

Proposal Part One:

A. Project Information Form (continued)

19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:

- ☐ (a) implementation of Urban Best Management Practices
- ☐ (b) implementation of Agricultural Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable Objectives (include QO number(s))

- ☐ (d) other (specify)

DWR WUE Project related to:

- ☐ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

If yes, the applicant must complete the CALFED PSP Land Use Checklist found at http://calfed.water.ca.gov/environmental_docs.html and submit it with the proposal.

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Walter J. Bishop
General Manager

Date

Contra Costa Water District Raw Water Irrigation Metering Project

Proposal Part 2

Project Summary

The Contra Costa Water District provides unmetered raw water landscape irrigation service to approximately 540 customers who are in relatively close proximity to the Contra Costa Canal System. These customers are billed an annual flat rate based on the size of the parcel being irrigated. The District also provides metered raw water irrigation service for customers whose demands are substantial enough for their consumption to be accurately measured with propeller type metering devices. Recent metering of several previously unmetered raw water irrigation customers has shown that billing based on actual consumption provides a significant economic incentive to curtail irrigation water use. Results from this pilot program show that consumption was reduced by nearly two-thirds compared to the prior year.

The purpose of this project is to meter 50 raw water irrigation customers with parcels of one acre or larger and to bill those customers based on their metered consumption. This is not anticipated to result in significant new revenues to the District, but will reduce the amount of water used, and should also reduce the amount of the District's unaccounted for water. This project will also permit evaluation of relatively new battery driven magnetic meter technology to determine if parcels of even smaller sizes could be economically and accurately metered. This may be possible due to the ability of these magnetic meters to measure low flow rates accurately.

It is estimated that 440 acre-feet of raw water would be saved annually as a result of this program. This is about 0.4% of the District's annual water use. The bulk of the unused water would be saved during the peak irrigation season in the summer and early fall when the Statewide water system is under the most stress. The annual cost savings to the District of not having to purchase and deliver 440 acre-feet of water is estimated at about \$48,500 annually in current dollars. There would also be benefits to other water users by having this additional supply available, particularly in years of shortage. This additional benefit could double the tangible benefits to nearly \$100,000 per year.

The estimated cost of metering 50 services is \$372,000, including overhead costs. If only the financial benefits to the District are considered, the estimated payback period is about seven and one-half years. If the additional benefits to other water users are considered, then the estimated payback period is less than four years. The economic life of the meters is estimated at 20 years.

A. Scope of Work: Relevance and Importance

1. Nature, Scope, and Objectives of the Project

The project's objective is to meter raw water irrigation services that are currently billed based on an unmetered annual flat rate charge. After one irrigation season, these services would be billed based on actual metered consumption. The purpose of not billing based on consumption for the

first irrigation season would be to determine a baseline amount of consumption so that the price elasticity of billing versus a flat rate charge may be determined. This information will also be used to determine if the District's charge for flat rate services is based on a reasonable estimate of actual raw water consumption for unmetered irrigation services. The new meters would be installed by District staff, and consumption data and analysis would also be performed by District staff.

2. Statement of Critical Water Issues

Contra Costa Water District exports its water directly out of the Bay-Delta. As such, water conserved by the District directly improved the Bay Delta. Expansion of raw water metering will further enhance the existing water conservation program, which has been in place since 1989. It is in the best interests of the District and other Bay-Delta water users to promote water conservation through every feasible and economical method. The District has had a water conservation program since 1989, including a number of elements. Metering raw water irrigation services and billing based on actual water consumption has proven to provide a significant economic incentive to limit irrigation water use to near optimum levels.

The District's Future Water Supply Study (FWSS) analyzed the District's projected water needs through completion of projected build-out in 2040. This study was completed in 1998 and updated in 2001. A major element of the plan to meet future water needs in the FWSS is water conservation programs, where it is estimated that 5% of ultimate water supply would result from conservation programs and projects. The Raw Water Irrigation Metering project is consistent with the FWSS conservation estimates and objectives.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring and Assessment

1. Methods, Procedures and Facilities

District staff will evaluate all potential raw water irrigation metering sites to determine the most practical metering location. Each property will also be surveyed to determine the amount of property currently subject to irrigation and the total amount of property that could be irrigated. Following meter installation, each meter will be read at least monthly and consumption information will be recorded for one year prior to initiation of billings based on metered consumption. In addition, daily temperatures and weather conditions will be tracked so that year over year consumption and estimated water savings may be determined. This methodology will result in the most reliable estimate of water consumption pattern changes due to metered consumption billing versus annual flat rate billing. In addition, resulting information may be used to evaluate the amount of annual consumption for those customers who are not metered, further refining the District's unaccounted for water results.

2. Task List and Schedule

The schedule below breaks out the key tasks and sub-tasks for the two-year proposed project.

Task	Task Name	Task Description	Costs	Expected Start	Expected Complete
1	Project Planning		\$2,000	10/1/02	10/31/02
	Customer Identification	Identify Potential Services for Metering			
2	Program Administration				
	Meter Site Evaluation	Review Potential Sites for Meter Installation	\$6,000	11/1/02	12/31/02
	Direct Mail to Customers	Develop Metering Notification Materials			
	Property Surveys	Schedule and Conduct Property Size Surveys			
3	Implementation		\$352,000	12/1/02	7/1/03
	Meter Installation	Install Meters at Sites Determined in Task 2			
		Notify Customers Installation Complete			
	Pre-Billing Monthly Reports	Notify Customers Monthly in Year 1 of Actual Consumption			
	Monthly Billing	Initiate Monthly Billing Based on Metered Use After Year 1			
4	Data Collection and Analysis		\$12,000	1/1/03	6/30/05
	Parcel Data	Develop CBIS data base for all newly metered services. Data to include items listed in Section B3 below			
	Consumption Data	Track consumption monthly by location			
	Weather Data	Track weather data by month, including temperature and rainfall			
	Water Savings	Develop water savings calculation for each site, including expected savings in wet, dry and normal water years			

3. Monitoring and Assessment

The monitoring of the program will be coordinated through the District's existing Customer Service Division using the Customer Billing and Information System (CBIS). Data to be collected as part of this program include:

- ?? The number of flat rate raw water irrigation accounts with parcel sizes of one acre or larger and the amount of property currently being irrigated and the amount which could be irrigated
- ?? Metering information for each customer metered, including date of meter installation and actual monthly consumption for each meter
- ?? Weather information, including evapotranspiration, temperature and rainfall
- ?? Total program costs per year, including labor, materials, and overhead services
- ?? Total program budget per year
- ?? Program funding sources per year, including intra-agency funding mechanisms and external funding sources
- ?? Customer contact information including program and metering completion notification, monthly consumption information transmittals, conservation surveys and other support, customer calls to Customer Service section, etc.
- ?? Description of program related issues among customers moved from annual flat rate to metered consumption billings

The District raw water irrigation meter installation, monitoring and billing program will install 50 new battery operated magnetic meters over two-years. Pre-billing initiation metered consumption data will be compared to post-billing data and normalized for weather conditions to determine final estimated annual water savings. Based on initial pilot results, and the initial estimated amount of customer acreage being shifted from flat rate to metered service of 120 acres, a conservative figure for cumulative water savings for the 50 metered installations is 8,800 acre-feet over the 20-year useful life of the meters.

Program success will be measured by determining the change in water use for irrigation purposes as a result of being billed based on actual metered consumption versus an annual flat rate. In addition, the amount of water that the average flat rate customer should be paying for per increment of property may also be determined by study data.

C. Qualifications of the Applicants and Cooperators

1. Resumes of Project Managers

See attached resume.

D. Benefits and Costs

1. Budget Breakdown and Justification

The budget for the program is listed in the table below. The total cost for the project is \$342,000.

Budget Item	Average Cost per Installation	Total Cost Estimate for 50 Meters
a. Land Purchase/Easement	0	0
b. Planning/Design/Engineering	\$240	\$12,000
c. Materials/Installation	\$4,800	\$240,000
d. Structures	0	0
e. Equipment	0	0
f. Environmental Mitigation	0	0
g. Administration/Overhead	\$2,400	\$120,000
h. Project/Legal/License Fees	0	0
i. Contingency	0	0
j. Other	0	0
Total	\$7,440	\$372,000

Labor costs, including benefits, compose the majority of the budget to plan, administer and implement the program. Materials represent about \$50,000, or 13.5%, of the total budget, or \$1,000 per meter installation. Each meter installation will be essentially a design/build for each site selected, which is why item b., above, is a relatively small percentage of the total project at 3.2%. Installation costs for each meter are estimated at \$3,800, including labor and benefits, or 51.1% of the project budget. Administration and overhead includes site evaluations, property surveys, customer communications and data collection and analysis totaling \$18,000, or 4.8% of the budget. District overhead allocated to this project is \$102,000, or 27.4% of the project budget. This project would involve significant management oversight and would also include several status reports to the Finance Committee of the Board of Directors.

2. Cost Sharing

Cost sharing is not included as part of this project proposal.

3. Benefit Summary and Breakdown

The project outcome is that 50 of the District's larger raw water landscape irrigation customers will be converted from unmetered to metered service. It is anticipated that this will result in water savings of approximately 8,800 acre-feet, cumulatively over the 20-year life of the meters. One year of water consumption data collection will be completed prior to billing these customers based on metered use. Collection and analysis of this first year of data will allow the District to better evaluate how much water unmetered customers are actually using to irrigate without the economic incentive to conserve that paying for actual water use creates. Initiation of billing based on metered consumption in the second year will actually provide the economic

conservation incentive, and the District will be able to evaluate how much this incentive actually changes consumption behavior for raw water irrigators. Results of a pilot study indicate that consumption may be reduced by as much as 65%, and it is estimated that, on average, 440 acre-feet of raw water will be saved annually as a result of converting these customers from unmetered to metered service.

As a result of collecting pre-metering and post-metering consumption data, the District will be able to develop the estimated average raw water irrigation consumption per unit of property for customers who cannot practically receive metered service. This means that the annual charge that should be applied for such services may more accurately reflect the actual cost of service for flat rate customers.

a. Quantify Project Outcomes and Benefits

It is estimated that the average annual water savings associated with metering 50 additional raw water irrigation customers will be 440 acre-feet. The estimated avoided cost of raw water purchase and delivery to the District in current dollars is \$110 per acre-foot, or \$48,500 annually. This water savings would take place predominantly during the irrigation season, when total regional and statewide demands are the highest, thus making this water available for other beneficial uses. The value of this beneficial use is estimated to be equivalent to the District's avoided cost of water, for a total economic benefit of about \$97,000 annually.

b. Non-quantifiable Project Outcomes and Benefits

There are numerous project benefits that cannot be quantified. These are listed below:

Non-quantifiable Project Outcomes and Benefits	Beneficiary
Economic savings to customers from less water used and lower storm drain runoff/costs	All
Improve the Bay Delta ecosystem through reduced water diversions by CCWD from the Delta. Increased water use efficiency will have a direct benefit for the availability of water resources in the Delta.	All
Sustained economic health of the local business community from a reliable supply of water	CCWD Customers
Availability of accurate data for unmetered raw water consumption per unit of land for use in developing reasonable cost of service unmetered annual charges	CCWD
Evaluation of battery driven for accuracy at low flows and determination of potential for expanded metering of smaller customers	All
Reduction in unaccounted for raw water	CCWD
Improved local aquatic habitats by reducing landscape water runoff containing pesticides, herbicides and fertilizers	All

Beneficiaries: CalFed (CF), Contra Costa Water District (CCWD), CCWD Customers, All agencies/society (ALL)

4. Assessment of Costs and Benefits

a. Major Assumptions and Methodologies

- ?? Average meter installation cost, including materials, will be \$4,800
- ?? Average annual savings per acre of metered property will be approximately 3.67 acre-feet based on pilot studies within the District's service area
- ?? CCWD avoided cost of delivered raw water is \$110 per acre foot in current dollars
- ?? Newly metered services will be subject to monthly reading and data collection for one year prior to initiation of billing based on metered consumption
- ?? Weather related data such as evapotranspiration, temperature and rainfall will be collected during the initial year of data collection as well as the first year of billings based on metering to normalize annual data for differing weather conditions
- ?? Normalized consumption data will be analyzed to determine: 1) the impacts of flat rate billings versus metered billings on customer consumption patterns and 2) to assist in creating a valid cost of service estimate for remaining unmetered services

b. Benefits and Costs

The cost for the program and the benefits for the quantifiable savings for each project beneficiary are listed below. All costs and benefits are expressed in present values, and have not been subject to adjustments for future inflation.

	Costs	Benefits	
Participant	Program Costs	Program Life Savings	Program Life Savings
	(Current \$)	(Water in AF)	(Current \$)
CCWD	\$0	8,800 AF	\$968,000
CALFED	\$372,000	8,800 AF	\$968,000

CALFED benefits assume that the value of saved water is at least equivalent to CCWD avoided cost of water

Non-quantifiable benefits to the various project beneficiaries are summarized in Section D. 3. b., above.

E. Outreach, Community Involvement and Acceptance

Unmetered raw water irrigation customers who are determined to be practical for metering will be notified of the District's intent to meter their service and for billing based on metered consumption one year following the meter installation. Customers will also be sent monthly statements of actual water consumption during the initial year, including what the cost would be if their bills were based on metered use. Prior to initiation of billing based on metered consumption in year two, District conservation services would be offered by the District to each of these customers to assist them in optimizing irrigation schedules and reducing consumption and their raw water bills.

Public workshops conducted in late 2001 with unmetered raw water irrigation customers resulted in a strong preference to be billed based on actual metered consumption rather than an estimate of average use for the entire customer classification. Customers believed that this would allow them the greatest degree of control in managing their use and, therefore, their irrigation water costs. They also expressed that this would provide them “credit” for good irrigation conservation practices such as use of drip systems and drought tolerant landscapes.

Karen S. Ustin

SUMMARY: ?? Master of Business Administration Degree
?? Significant capital project planning and management experience
?? Experience in customer service and public outreach efforts

EDUCATION: **Master of Business Administration, 1984**
University of Southern California Marshall School of Business

Master of Arts in College Administration, 1972
Claremont Graduate School

Bachelor of Arts in History, 1971
Occidental College

EXPERIENCE: **Contra Costa Water District, September 1993 to Present**
Director of Finance and Customer Service, July 1998 to Present
?? Responsible for financial planning and reporting, recommending customer rates, fees and charges to the Board of Directors, information systems, payroll, procurement and general District support services.
?? Manage customer service function for all customer classes.
Developed and conducted public workshops with unmetered raw water irrigation customers on cost of service related issues.
Responsible for meter reading and customer billing functions.
?? Provide tracking and reporting services for grant related projects.
?? Negotiated partnership agreements with other local agencies for mutually beneficial services.
Executive Assistant to the General Manager, October 1994 to July 1998
?? Coordinated development of application materials for low-interest State Revolving Fund loans related to water quality.
?? Negotiated and administered consulting services agreements.
?? Oversaw development and review process for Board of Directors decision documents.
Project Analyst – Construction, September 1993 to October 1994
?? Developed and tracked departmental budget
?? Prepared Board of Directors recommendation documents.

KCM Leisure Enterprises, Inc., July 1988 to August 1993
Chief Financial Officer
?? Developed initial business plan and secured Small Business Administration funding
?? Responsible for financial planning and reporting, inventory controls, and general business activities.

Pacific Telephone/Bell, September 1973 to January 1990

Various increasingly responsible positions in technology planning, engineering and operations with responsibility for project planning, development, implementation, and development. Sequential job classifications follow:

**Director of Rate Case Management,
Director of Technology Planning Standards
Director of Company-Wide Audit
District Manager – Technology Planning, Southern California
Staff Manager – Technology Planning Statewide Staff
Staff Manager – Wire Center Planning, Southern California
Operations Manager – Project Implementation
Manager – Central Office Engineering and Project Management
Manager – Network Design Engineering
Technology Planner
Network Design Engineer
Equipment Supervisor – Wire Center Operations
Assistant Dial Services Manager**